

PCT REQUEST

Original (for SUBMISSION)

0	For receiving Office use only	
0-1	International Application No	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form PCT/RO/101 PCT Request	
0-4-1	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.169)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Patent Office (India) (RO/IN)
0-7	Applicant's or agent's file reference	HDL-PCT-27
I	Title of Invention	AN IMPROVED PROCESS FOR THE PREPARATION OF CEFIXIME
II	Applicant	
II-1	This person is	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	HETERO DRUGS LIMITED
II-5	Address	Hetero House, 8-3-166/7/1, Erragadda, Hyderabad, Andhrapradesh 500018 Hyderabad India
II-6	State of nationality	IN
II-7	State of residence	IN
II-8	Telephone No.	0091-40-23714249
II-9	Facsimile No.	0091-40-23774646
II-10	e-mail	bpsreddy@heterodrugs.com

PCT REQUEST

Original (for SUBMISSION)

III-1	Applicant and/or inventor	
III-1-1	This person is	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	PARTHASARADHI REDDY, bandi
III-1-5	Address	Hetero House, 8-3-166/7/1, Erragadda, Hyderabad, Andhrapradesh 500018 Hyderabad India
III-1-6	State of nationality	IN
III-1-7	State of residence	IN
III-2	Applicant and/or inventor	
III-2-1	This person is	applicant and inventor
III-2-2	Applicant for	US only
III-2-4	Name (LAST First)	RATHNAKAR REDDY, kura
III-2-5	Address	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
III-2-6	State of nationality	IN
III-2-7	State of residence	IN
III-3	Applicant and/or inventor	
III-3-1	This person is	applicant and inventor
III-3-2	Applicant for	US only
III-3-4	Name (LAST First)	RAJI REDDY, rapolu
III-3-5	Address	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
III-3-6	State of nationality	IN
III-3-7	State of residence	IN
III-4	Applicant and/or inventor	
III-4-1	This person is	applicant and inventor
III-4-2	Applicant for	US only
III-4-4	Name (LAST, First)	MURALIDHARA REDDY, dasari
III-4-5	Address	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
III-4-6	State of nationality	IN
III-4-7	State of residence	IN

PCT REQUEST

Original (for SUBMISSION)

III-5	Applicant and/or inventor	applicant and inventor	
III-5-1	This person is	US only	
III-5-2	Applicant for	MURALI, nagabelli	
III-5-4	Name (LAST First)	HETERO DRUGS LIMITED	
III-5-5	Address	Hetero House, 8-3-166/7/1, Erragadda, 500 018 Hyderabad India	
III-5-6	State of nationality	IN	
III-5-7	State of residence	IN	
V	DESIGNATIONS		
V-1	The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.		
VI-1	Priority Claim	NONE	
VII-1	International Searching Authority Chosen	Austrian Patent Office (ISA/AT)	
VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	1	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	1	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	

PCT REQUEST

Original (for SUBMISSION)

VIII-2-1	Declaration: Entitlement to apply for and be granted a patent Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4 17(ii) and 51bis 1(a)(ii)). In a case where the declaration under Rule 4 17(iv) is not appropriate: Name (LAST, First)	in relation to this international application HETERO DRUGS LIMITED is entitled to apply for and be granted a patent by virtue of the following:
VIII-2-1(i)		HETERO DRUGS LIMITED is entitled as employer of the inventor, PARTHASARADHI REDDY, bandi
VIII-2-1(i)		HETERO DRUGS LIMITED is entitled as employer of the inventor, RATHNAKAR REDDY, kura
VIII-2-1(i)		HETERO DRUGS LIMITED is entitled as employer of the inventor, RAJI REDDY, rapolu
VIII-2-1(i)		HETERO DRUGS LIMITED is entitled as employer of the inventor, MURALIDHARA REDDY, dasari
VIII-2-1(i)		HETERO DRUGS LIMITED is entitled as employer of the inventor, MURALI, nagabelli
VIII-2-1(x)	This declaration is made for the purposes of:	all designations except the designation of the United States of America


PCT REQUEST

Original (for SUBMISSION)

VIII-4-1	<p>Declaration: Inventorship (only for the purposes of the designation of the United States of America)</p> <p>Declaration of Inventorship (Rules 4.17(iv) and 5.1bis 1(a)(iv)) for the purposes of the designation of the United States of America:</p>	<p>I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.</p> <p>This declaration is directed to the international application of which it forms a part (if filing declaration with application).</p> <p>I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.</p> <p>I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications", by application number, country or Member of the World Trade Organization, day, month, and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.</p>
VIII-4-1-1	Prior applications:	



PCT REQUEST

Original (for SUBMISSION)

		<p>I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.</p>
VIII-4-1-1-1	Name (LAST, First)	PARTHASARADHI REDDY, bandi
VIII-4-1-1-2	Residence: (city and either US State if applicable or country)	Hyderabad, India
VIII-4-1-1-3	Mailing address:	Hetero House, 8-3-166/7/1, Erragadda, Hyderabad, Andhrapradesh 500018
VIII-4-1-1-4	Citizenship:	Hyderabad India IN
VIII-4-1-1-5	Inventor's Signature: (If not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application The signature must be that of the inventor, not that of the agent)	
VIII-4-1-1-6	Date: (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)	22-03-2005



PCT REQUEST

Original (for SUBMISSION)

VIII-4-1-2-1	Name (LAST, First)	RATHNAKAR REDDY, kura
VIII-4-1-2-2	Residence: (city and either US State, if applicable, or country)	Hyderabad, India
VIII-4-1-2-3	Mailing address:	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
VIII-4-1-2-4	Citizenship:	IN
VIII-4-1-2-5	Inventor's Signature: (If not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)	
VIII-4-1-2-6	Date (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)	22.03.2005.
VIII-4-1-3-1	Name (LAST, First)	RAJI REDDY, rapolu
VIII-4-1-3-2	Residence: (city and either US State, if applicable, or country)	Hyderabad, India
VIII-4-1-3-3	Mailing address:	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
VIII-4-1-3-4	Citizenship:	IN
VIII-4-1-3-5	Inventor's Signature: (If not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)	
VIII-4-1-3-6	Date (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)	22/03/2005-





PCT REQUEST

Original (for SUBMISSION)

VIII-4-1-4-1	Name (LAST First)	MURALIDHARA REDDY, dasari
VIII-4-1-4-2	Residence: (city and either US State, if applicable or country)	Hyderabad, India
VIII-4-1-4-3	Mailing address:	Hetero Drugs Limited (R & D), Plot No. B-80 & 81, A.P.I.E., Balanagar 500018 Hyderabad India
VIII-4-1-4-4	Citizenship:	IN
VIII-4-1-4-5	Inventor's Signature: (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)	 22/3/05
VIII-4-1-4-6	Date (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)	
VIII-4-1-5-1	Name (LAST, First)	MURALI, nagabelli
VIII-4-1-5-2	Residence: (city and either US State if applicable, or country)	Hyderabad, India
VIII-4-1-5-3	Mailing address:	HETERO DRUGS LIMITED Hetero House, 8-3-166/7/1, Erragadda, 500 018 Hyderabad India
VIII-4-1-5-4	Citizenship:	IN
VIII-4-1-5-5	Inventor's Signature: (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor not that of the agent)	 22/03/05
VIII-4-1-5-6	Date (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)	

PCT REQUEST

Original (for SUBMISSION)

IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	10	✓
IX-2	Description	10	-
IX-3	Claims	3	-
IX-4	Abstract	1	✓
IX-5	Drawings	0	-
IX-7	TOTAL	24	
	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-19	Figure of the drawings which should accompany the abstract		
IX-20	Language of filing of the international application	English	
X-1	Signature of applicant, agent or common representative	 22-03-2005	
X-1-1	Name	HETERO DRUGS LIMITED	
X-1-2	Name of signatory	PARTHASARADHI REDDY, bandi	
X-1-3	Capacity		
X-2	Signature of applicant, agent or common representative	 22-03-2005	
X-2-1	Name (LAST First)	PARTHASARADHI REDDY, bandi	
X-2-2	Name of signatory		
X-2-3	Capacity		
X-3	Signature of applicant, agent or common representative	 22.03.2005	
X-3-1	Name (LAST First)	RATHNAKAR REDDY, kura	
X-3-2	Name of signatory	22.03.2005	
X-3-3	Capacity		
X-4	Signature of applicant, agent or common representative	 22/03/2005	
X-4-1	Name (LAST, First)	RAJI REDDY, rapolu	
X-4-2	Name of signatory		
X-4-3	Capacity		

10/10

PCT REQUEST

Original (for SUBMISSION)

X-5	Signature of applicant, agent or common representative	<i>bw 22/3/05</i>
X-5-1	Name (LAST, First)	MURALIDHARA REDDY, dasari
X-5-2	Name of signatory	
X-5-3	Capacity	
X-6	Signature of applicant, agent or common representative	<i>mm 22/03/05</i>
X-6-1	Name (LAST, First)	MURALI, nagabelli
X-6-2	Name of signatory	
X-6-3	Capacity	

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/AT
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
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Original (for SUBMISSION)

13-2-3	Validation messages Names	Green? Applicant 1:Street address missing
	Validation messages Names	Green? Applicant 2:Street address missing
	Validation messages Names	Green? Applicant 3:Street address missing
	Validation messages Names	Green? Applicant 4:Street address missing
	Validation messages Names	Green? Applicant 5:Street address missing
	Validation messages Names	Green? Applicant 6:Street address missing
13-2-4	Validation messages Priority	Green? No priority of an earlier application has been claimed. Please verify
13-2-6	Validation messages Declarations	Green? Manually inputted data. Please verify the contents of the information provided.
13-2-7	Validation messages Contents	Green? The international application contains no drawings. Please verify.

There is provided an improved process for preparing cefixime. Thus, for example, 7-amino-3-vinyl-3-cephem-4-carboxylic acid is reacted with 2-mercapto-1,3-benzothiazolyl-(Z)-2-(2-aminothiazol-4-yl)-2-(methoxycarbonyl)-methoxyimino acetate in tetrahydrofuran and water at 4°C in the presence of triethylamine. The reaction mass is extracted with ethyl acetate. 7-[2-(2-Amino-4-thiazolyl)-2-(methoxycarbonylmethoxyimino)acetamido]-3-vinyl-3-cephem-4-carboxylic acid triethylamine salt present in the aqueous layer is hydrolyzed with sodium hydroxide in less than 30 minutes and aqueous hydrochloric acid is added immediately to adjust the pH to 4.8 to 5.2. Then, aqueous hydrochloric acid is added at 35°C to adjust the pH 2.5 and cooled to crystallize cefixime trihydrate in high purity.